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ESSAY

Towards the Improving of the  
**Hempen and Flaxen**  
MANUFACTURES  
IN THE  
KINGDOM  
OF  
IRELAND.

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By *Louis Crommelin* Overseer of the Royal  
Linnen Manufacture of that Kingdom.

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D U B L I N :

Printed by *Andrew Crook* Printer to the Queen's most  
Excellent Majesty, on the *Blind-Key*. 1705.





TO THE

Most Noble and most Illu-  
strious PRINCE

JAMES

DUKE OF

ORMONDE,

Earl of *Brecknock*, and Baron  
of *Lanthony* and *Moor-Park*, in *England*,  
Duke, Marquess and Earl of *Or-*  
*monde*, Earl of *Offory*, Viscount *Thurles*,  
Baron of *Arklow*, Lord Lieutenant  
General and General Governor of  
Her Majesties Kingdom of *Ireland*,  
and Honorary Butler of the same,  
Lord of the Regalities and Liberties  
of the County Palatine of *Tipperary*,  
General of the Horse, Captain of  
one

## The Dedication.

one of Her Majesties Troops of Horse-Guards, Lord Lieutenant of the County of *Somerſet*, one of the Lords of Her Majesties moſt Honourable Privy Council, Chancellor of the Universities of *Oxford* and *Dublin*, High Steward of the Cities of *Westminster*, *Bristol*, and *Exeter*, and Knight of the moſt Noble Order of the Garter.

May it please Your Grace,

**T**HAT Protection Your Grace has been pleas'd at all times to give to the Protestant Refugees, does not only engage them to return their grateful Acknowledgment to Your Grace, but also to use their best Endeavours to promote

## The Dedication.

mote the Good of this Country,  
which has so charitably receiv'd  
them, and where they enjoy the  
Advantages of Her Majesties most  
Happy Government under Your  
Grace's Administration : And  
Your Grace having been pleas'd  
to allow me the Liberty to Enter-  
tain You on the Subject of the  
Linnen Manufacture, in which  
the Prosperity of this Country is  
so much concern'd ; and having  
apply'd my self from my Infancy  
to the Improvement of that Ma-  
nufacture, I thought it would best  
answer Your Grace's Glorious De-  
signs

## The Dedication.

*signs to promote the Good of this Kingdom to Publish a Treatise about it, of which I will venture to say, That if the Rules there recommended are duly observ'd, they will be of general Use and Advantage. I presume to Dedicate this Work to Your Grace, being ambitious that the Book and the Author shou'd have the same Patron; and I am heartily glad of this Opportunity of declaring to the World that I am,* My Lord,

Your Grace's most Dutiful and  
most Faithful Humble Serv.

*Louis Crommelin.*



# AN ESSAY

## Towards the Improving of the Hempen and Flaxen Manufactures in the Kingdom of IRELAND.

**T**HE following Discourse is not calculated with a design to Instruct or Teach People intirely Ignorant of the several Misteries relating to the Manufactures ; it being impossible for me or any other Person whose Thoughts are employed in managing the Factory now under my Care, to think of each minute Circumstance which ought to be observed or avoided in a System which might have a just pretence to Perfection. I own that this is far from being such an one as would of it self make a Novice in the Trade capable to set up for a Master, admitting that he should take pains to compass the Theory as well as the Practical part of the Trade : But I dare affirm that this is the most exact of any compos'd, as yet, on that Subject in any Language ; and that it will, (if observ'd and follow'd) bring the Linnen Manufacture of this Kingdom into a much better State and Condition than hitherto it has been : And that it will serve to rectifie the mistakes which the People of this Kingdom have hitherto

lain under in relation to those Trades, which (if they will please to experience, I question not but that they will hereafter candidly own.

Before I come to speak of the several Branches of the Linnen Manufacture, I hold my self obliged to remove some Prejudices that seem universally to possess the minds of the People of this Kingdom, in relation to that Trade, which are these : *1st.* That the Spinners, the Weavers and the Bleachers Trades are such poor abject Trades all the World over, and particularly in *Ireland*, that it is impossible for Men of a free generous Spirit (such as the People of this Kingdom must be allowed to be) to conform themselves thereunto ; they having not a prospect of Benefit sufficient to reward the Care and Pains that are incident to it. To which I give this answer, *1st.* That the People of this Kingdom must not make a Judgment of what Benefit and Advantage may redound to the Country by the means of this Trade from any Improvement they have hitherto made ; for they never were put into the way of doing any thing therein comparably to what they may do when they will please to turn their Industry that way : For there is a vast difference between a Trade that is cultivated by a few, whose Produce is hardly known in Foreign Markets, whereby to acquire a Reputation and Esteem ; and a Trade that is General and in some measure National, that is under due proper Regulations, whose Goods beget an Esteem and Value in proportion to their Deserts.

*Secondly,* You must not make an Estimate of the Poverty of the Trade in *France, Flanders, Holland, or Germany*, from the Poverty of the People of those Countries, where they are managed with the utmost Advantage that hitherto could be ; but you must do Justice to your own Constitution and Nature of Government, and lay the Poverty of those People to the Arbitrary and Despotick Power of their Governors, who Cess and Poll their People with Taxes, that no People could bear but such as enjoy a gainful Trade. Therefore he that would seriously reflect on the

the constant Expence which they of *Holland* are at to the State every Year, and how they are able to support this Expence, together with their numerous Families and other incident Charges, by the help of this Trade; need not fear in a free Country, as this is, to be sufficient Gainers if they turn their Industry thereto. If Publick Taxes are so heavy in *Holland*, how much more are they so in *France*, *Flanders* and *Germany*, where the Princes Will and Pleasure is a Law sufficient to make the Subjects Property to become the Princes, without the free Assent of their People? Yet under these Difficulties the People expert in these several Trades, thrive, and frequently leave several Thousands of Pounds *Sterling* behind them among their Children and Relations; Instances whereof I could give many, but that I fear to be over burthensome thereby to my Reader.

The second Objection which People seem most to lay to Heart, is the fear of want of Market for their Goods.

To which I answer, That if the People of this Kingdom come heartily into this Trade, there is no danger but that their Goods will find a Market according to their Value: For it is Worth and real Goodness that engages Chapmen, and not Name. If *Irish* Sail-cloth can be made of its Native Hemp of equal Goodness with *Holland* Duck or *Norman* Canvas, does any Man believe that the Name will add Honour and Reputation for ever? The like may be said of the Linnen Cloth Imported from *Holland*, *France* and *Germany*: Do the Names of the Towns of *St. Quintin*, *Cambray*, &c. add to the Esteem which the World has for Kenting and Cambricks? If it does, you may with Time, Patience and Industry, make yours as Eminent. This Advantage you have over them of *Holland*; You have or may have your Materials of Hemp and Flax within your selves, and of your own Growth, of equal Goodness with what they are forced to Import from other Countries; and that at greater Expence by far than what they will stand the Manufacturers of this Kingdom whenever the Trade becomes General, and People become conversant therein.



As for the Soil of this Country, all the whole Kingdom (except from *Dundalk* Northwards) will bear as good Hemp as the World affords ; nay, I may say better ; for the Climate seems to be adapted to it by Nature beyond any of the Eastern Countries. I have been here now six Years, and travelled over most part of it : I have made my Observations (during most of that time) of the Growth of that Material ; and can affirm that the Hemp of this Kingdom would make Cordage, Sail-Cloth, Fishing-Nets, or any other Work, that the best *Riga* or *Nerva* Hemp might be applied to. As to the Flax, there is no part of the Kingdom which would not produce it in very great Perfection, if so be the People of the Country were thoroughly instructed therein, and proper Persons were employed in cultivating it.

Having taken this Freedom with my Reader in reference to the Manufactures in general, I will not detain him longer from the several Branches of it ; but only give him some short Account of my self, why I (being a Stranger in the Kingdom) should presume to offer my Thoughts in publick in relation to Trade and Commerce, which truly are the Nerves and Sinews of every Country : It was with great diffidence of my self that I undertook a Matter of so nice a Nature ; but the Commands of those Great and Honourable Persons intrusted to super-intend our Factory, to imploy my self therein, made me judge my Endeavours would be accepted ; though I was not without apprehensions of my own Inability of expressing my self in proper terms, so as to be plainly understood by the People of the Country : But through the assistance of some Honourable Persons acquainted with my Native Language, I have brought it to speak my Thoughts as well as the time I had to do it in, and my Leisure would permit. As for my Ability to instruct others, I shall only say that I am a Native of *St. Quintin*, a Country wherein the Manufacture of Linnen has flourished these several hundred Years : My Ancestors beyond the memory of



Man have been constantly Gainers by that Trade : I my self have followed it successfully for upwards of **Thirty** Years ; until it pleased God to raise the Persecution against the Protestants of *France*, for which reason I was (with many others of that Religion) necessitated to quit that Kingdom. After I came to *England*, the Asylum or Sanctuary of the persecuted Protestants, His late Sacred Majesty of Glorious Memory King *William*, encourag'd me to come and further (all I could) the Linnen Manufacture in this Kingdom : He was graciously pleased to Honour me so far as to give me Audience himself, more than once, on that Subject : He seemed to lay to Heart the promoting of that Work ; and I took His Zeal in this matter to be a Demonstration of His Favour and Kindness which He bore to *Ireland*. Her present Majesty has also since Her Accession to the Throne expressed Her Gracious Intentions to this Kingdom and Trade. Thus far I have been thought worthy or able to promote or advance this Trade in *Ireland* ; and as for my Performances therein, let them speak for themselves. I have been, ever since my Arrival in *Ireland*, ready and willing to communicate to all People of the Country whatever has occurred to me in the Trade. I must own without Vanity that some good Amendment has been wrought thereby in the North ; and more might have been done had I not been a Stranger amongst them ; consequently not able to influence them, or gain all the Credit I would to what I said, until they had experienced my Practice. I have this further to say in my own Behalf, that there is no one part of the Linnen Manufacture wherein I am not able to work with my own Hands. I am, and always shall be ready to communicate what I know to the Country and every Member of it, whenever they will please to give me an opportunity ; and shall bless God that he has or shall make me an Instrument of Benefit and Advantage to Her Majesty and the People of *Ireland*, of whose Grace and Favour I have, and shall for ever have a grateful Sense.

## CHAP. II.

*Shewing, First, the true way of cultivating and preparing Flax.  
Secondly, Some Observations on the pernicious way of preparing  
it as it is now generally practised in Ireland.*

**F**LAX is a Material, if well cultivated, will sufficiently reward the Cost and Pains of the Husbandman that Sows it: The Landlord and Tenant will each find their Account and Profit thereby; but Time and Experience therein are absolutely necessary to bring it about.

The first thing requisite therein is, that your Flax Seed be good, which ought from time to time be renewed, and brought fresh into the Kingdom from *Riga* or *Nerva*; for Flax Seed being constantly made use of in one and the same Soil will degenerate; shifting the Soil will much help it: But in *France* and *Flanders* they find by Experience that fresh Supplies of Seed from *Riga* and *Nerva* are requisite; and I observe that the same must be done in this Kingdom; not but that when you observe Flax Seed to degenerate in one Country, it may be made use of in another: But when it does so degenerate as to become unfit for Sowing, as frequently it will through accidents as well as unfitness of Soil, it may then be converted to Oyl, which is also a gainful Trade in Foreign Countries.

2<sup>dly</sup>, You will perceive your Flax Seed to be degenerated by observing whether your Flax grows to a sufficient length; or if instead of one or two Spires that good Flax generally shoot, there be more; or if your Flax has many Heads, it is then high time to shift or renew your Seed: You may then, if you please, try Seed of another Country; and if you find that also to fail, you must then furnish your self from *Riga* or *Nerva*.

3<sup>dly</sup>, Your next care ought to be in the Choice of your Soil for Flax ; for all Soils are not proper, generally speaking : Soil proper for Barley is also good for Flax ; therefore the next Year after you have had your Crop of Barley, you may venture to Sow your Flax Seed in that Ground. Therefore please to try the following Method : As soon as your Barley is well off the Ground, give it one good Plowing, and then Harrow it so as to lay it flat and level without Ridges ; You must in *March* Plow it over again, and Harrow it level : About the middle to the end of *April*, if the weather be dry, you must Plow and Harrow it again, leaving it flat without Ridges, to the end your Flax may grow of equal length : Then, according as your Season is dry, you must Sow your Seed in the most equal manner possible, covering it carefully with your Harrow. Each Plantation Acre of this Kingdom will take four Bushels of Flax Seed ; and so the proportion ought to be to the Ground you design to Sow. Flax will grow in other Grounds than those proper for Barley, provided they be not cold or spewy Grounds, or such as are incident to Rushes, Flags, or that it is not an over stiff Clayey or Stoney Soil ; in all which cases Flax will not thrive.

4<sup>thly</sup>, When your Flax has shot three or four Inches above the Ground, it must be carefully Weeded ; and so let it stand until it is ripe and fit for Pulling. One of the greatest niceties in raising of Flax, is to know when Flax is ripe and fit for pulling ; for if you pull it ere it is ripe, your Flax is always weak and unserviceable ; your Seed will be ruin'd, and thereby render'd unfit for further Service : For I take that to be one of the main reasons why your Seed so soon degenerates in this Kingdom. The way to know when your Flax is perfectly ripe, is to observe when your Flax begins to grow yellow, and that the Heads or little Seed Pods are growing yellow, and the Leaves begin to fall off : Then cut some of these Pods where the Seed lies in such a manner as to cut the Seeds through ; if you find the Seed well colour'd, and



and that it is full large and well nourished; then you may conclude that your Flax is sufficiently ripe, and that it ought to be pull'd; the least time then slipp'd will be fatal, for it may as well be over ripe as under. In pulling of your Flax you ought to be extreemly careful to observe that the Roots thereof meet as even as is possible. You must be skilful enough to distinguish nicely between the several Qualities of your Flax; for each sort must be pulled apart, and kept asunder from the rest; for it will be next to impossible to separate them afterwards. And you will have different qualities of Flax in the same Soil, and spring from the same Seed. When I make mention of different qualities of Flax, I would be understood thus; That whoever pretends to raise Flax, and pull it, must observe that there are in Flax different degrees of coarseness. Some have the Stalks large, and greater than ordinary; that is called the coarsest Flax. Others there are more moderately large, which is the middle sort of Flax. The best sort of Flax is your small strawed Flax; this produces your best and finest Flax. These three sorts of Flax must be pulled apart, as I said before, which is done in this manner: They that pull your Flax must be careful to distinguish as they pull it; and observe when they have pulled their two Handfulls of a sort, to lay that by, so as they may know it; then proceed to pull two Handfulls of the middle sort, and so to the finest. When they have gathered enough to make a Stonk (as they call it in the North of *Ireland*) they must stonk it, taking care to give it Air enough to the end it may the better dry: The like you must do with your other sorts of Flax, perpetually keeping them asunder: These Stonks or small Barts ought never to be bigger than a Man's Thigh. Your Flax should stand in these Stonks or Barts for four or five Days to dry, taking care during that time to raise such of them as the Wind may have over-set: These four or five Days being over, if you find that your Flax is very dry, you may proceed to lay the Stonks closer together in the following manner:

You



You must draw them into Lines of about two Foot broad, with the Roots to the Ground, and let them stand thus endways as close packed together as you can, observing still this Caution, not to mingle the different sorts of Flax together : Thus you must let them stand expos'd to the Air for eight or ten Days together. If you are apprehensive of the Weather, you must defend your finest Flax by placing your coursest on the top of it ; turning up to the Air the Roots of your coursest Flax as it covers the fine. If in this time your Flax is thoroughly dry, your next business is to uncover it in a very fair Day, and let the Sun dry the Head of your Flax which was cover'd ; then turning half the Roots one way, and half the Heads the other, bind them into Sheaves the bigness of a Man's Waste : This you must do to the end your Sheaf may be of equal bigness every where. After your Flax is so dry that there is no danger of its heating, you ought to lay it in a convenient Barn ; where you ought to keep it until the ensuing Season, if possibly you can : But if you cannot spare it so long, but that you must of necessity water some of it the same Season that you pull it ; let it be the worst and coursest Flax that you water that Year : For this keeping of your Flax without watering till the ensuing Season, mightily preserves your Seed from heating : It also nourishes it, so that your Seed shall not degenerate near so soon as otherwise it will ; and you will find an extraordinary Advantage therein, in reference to the goodness and colour of your Flax.

5thly, If you cannot spare your Flax, but that you must water it the same Season that you pull it ; or if so be that you suffer it to lie the following Winter in your Barn : In the Spring of the Year you will have occasion for the Seed, then accordingly you must thresh your Flax, which is best done in the following manner : Untie the Sheaves, and turn all the Heads or Seed Pods one way, and spread each Sheaf on a firm clean Threshing-floor about three Inches thick ; then with the Mallet (which you will find described at the end

of this Book) thresh out the Seed : When that side of the Sheaf is sufficiently threshed, you must turn the Sheaf, and thresh the other side, constantly opening the Sheaf as you thresh, that you may reach all the parts of your Flax, and get all the Seed thereout. Having clear'd your Flax well from the Seed, you must be careful again to divide the Sheaves, and turn one half of the Roots thereof one way, the other half the other way ; to the end your Sheaves throughout may be as even and equal as is possible. Instead of tying these Sheaves in the middle, as you did at first when you ty'd them only for the Barn, you ought now to tie each Sheaf at each end thereof, about seven or eight Inches from the extream ends of the Sheaf. The Strings which thus tie your Flax ought to be strong, to prevent their giving way or breaking as you turn and dress your Flax in the Water. You must not tie them over hard, neither, lest you should thereby prevent the Water from coming to all parts of your Sheaf. When you come to the watering part, if you thresh your Flax before you have occasion to sow the Seed, you must take great care to prevent the heating of your Seed by frequent turning of it ; for if it gets the least heat, it is good for nothing but for making of Oyl : Wherefore it is that I have already told you, that it is not convenient to thresh your Flax (if possible you can avoid it) till the ensuing Spring. But knowing that the first Beginners must have occasion to use at least some of their Flax the same Season, I thought it would be requisite to speak my Thoughts and Sense of it in the plainest manner, to prevent Inconveniences which young Husbandmen may fall into, to their great Loss and Detriment.

*6thly*, Your next care is, how to water your Flax ; for thereon depends greatly the whole Manufacture : The Person ought to be both judicious and diligent who has the care thereof. The quality of the Water must be well consider'd : *Secondly*, The Season of the Year : *Thirdly*, The nature of the Flax which you design to water.

*First,*

*First*, As to the quality of your Water : The best for that purpose is your Lake or Lough Water, especially such Lakes or Loughs as have some motion, and do not perfectly Stagnat ; for such are no wise proper : But that does seldom happen in this Kingdom, most of your Lakes being Sources of Rivers, or having Rivers gently passing through them. Where Lakes are not conveniently to be had, Pits are to be made near some running Stream, which Pits ought to be proportionable to the quantity of Flax you design to water. In making of your Pits you ought carefully to chuse a place where the Sun may come effectually to warm your Water ; for the warmer your Water is the sooner and better will your Flax be watered. Your Pits ought to be about three or four Foot deep, and so contrived that the same quantity of Water may run off at the lower end of your Pit as comes in at the upper end thereof from your running Stream : By this means your Flax will get a good colour, which is impossible to be obtained as the People of this Kingdom do at present practice ; for they take no care where or when they water : Any Ditch or Hole where they can get but Water, there they lay their Flax, which dyes or tings the Water as black as Ink : This discolours their Flax in the first instant, to such a degree, that all the Bleaching in Nature can never bring their Cloth to a good colour. I understand that there is a notion in this Kingdom that Flax and Hemp are pernicious or destructive to Fish ; and that they have provided by Act of Parliament a Prohibition (as it were) against the laying of Hemp and Flax in Rivers, Streams, Brooks and other fresh running Waters : I dare not presume to oppose my weak Judgment to the Wisdom of a Legislature ; but things duly considered, I question not but that Flax or Hemp may be watered in Loughs, Rivers, Streams, and moving Waters, without prejudice to Fish. I confess, where the Water Stagnats, or has not sufficient motion, Flax or Hemp dyes the Water, and makes it to become black and putrid, which is injurious to Fish, and even to

Flax and Hemp it self : But where the Water has sufficient motion and room to dilate it self, the Fish are so far from being injured thereby, that they nuzzle and delight to resort thereto without the least Inconveniency.

Those Pits where you water your Flax (as I observed before) must be supplied by the Neighbouring Streams, so as they may constantly be kept full. Bog Water or your hard rough Water, such as will not bear Sope, are not proper for Flax or Hemp ; the first discolours you Flax or Hemp, the latter makes it hard and improper for working.

*Secondly*, As to the Season of the Year for watering your Flax : Certainly when your Water is warm and kindly, is the best time to do it in ; not but that you may water Flax in Spring and Harvest, but then it will require twice the time to do it in. In the Summer Season Flax will be watered in ten or twelve Days time, or thereabouts ; whereas in the Spring or Fall it will require three or four Weeks ; sometimes more, sometimes less, according as the Weather is colder or warmer.

*Thirdly*, As to the nature or quality of your Flax : I formerly observ'd to you to be cautious in the keeping the several sorts of Flax asunder or apart ; here you must be extremely careful not to confound them, for coarse Flax will not require half the watering that your fine Flax will ; the watering requisite for the one would totally ruine and destroy the other. These Cautions observed, you may proceed to water your Flax, by laying the Sheaves in Water as close as they can be laid : Your Flax will swim on the surface or top of the Water, therefore you must never fail to turn it each Day while it is in the Water. If the weather be warm, you will find your coarse Flax will be watered in ten or twelve Days, or thereabouts ; your finer Flax will yet take up more time, and your finest much greater time : But you must not therein depend upon computations of time, but rather make your Judgment thereof by the following Experiments : Take out of the middle of your Sheaf

a small



a small Handfull of Flax, and break gently some of the Stalks one by one, about two or three Inches above the Root; then pull the Flax easily towards the further end thereof, and if you find your Flax freely to separate from the Stalk or Straw, you may conclude that that sort of Flax is sufficiently watered; if so be that your Flax clings still to the Stalk or Straw, you may let it continue in the Water for some Days longer; and upon a second Tryal, if you find your Flax to separate well, then lay those Handfulls carefully apart, as much expos'd to the Air as you possibly can; and when they are thoroughly dry, break five or six Stalks thereof with your Nail at several places; and if you find that the Straw breaks easily, and by rubbing them between your Hands, that the Straw does freely and easily separate from the Flax, you should then take your Flax of that sort or quality out of the Water: In like manner you may proceed with the other sorts or qualities of Flax. When you have taken your Flax out of the Water, you must wash them clean from the filth which they may have contracted in the Water, then you ought to lay them in straight Lines or Rows on the Grass, in some Meadow Grounds, with the Roots one way, and as even and thin as possibly you can, that you may with the more ease turn them as occasion requires; which you must do by the help of a long straight Wand, that you thrust under the Heads of the Flax, and thereby turn them upside down. There is no great inconveniency in under-watering of Flax, for what is deficient therein may be cured in the Grassing of it; but over-watering rots and destroys Flax, that it becomes entirely unserviceable. If your Weather be moist and damp, you must so much the sooner turn your Flax. Your Flax must lie thus on the Grass till such time as you find it to change its colour, and to be entirely freed from all filth. You must observe after it is dry, whether the Straw is so rotten as to break easily from the Flax; if so, you may conclude that it is grassed and watered sufficiently: Your coarsest Flax will be grassed sooner than your finer, and your finer

finer sooner than your finest. As to your turning of the Flax on the Grass, you need not to turn it more than once, which ought to be when you find that the side next the Air is become of a good colour, free from any blackness or dullness which it may have contracted in the watering : You will find that that side of your Flax which lay first next the Grass will not require near the time to grass or obtain a colour which the other side did. Your Flax being thus respectively grassed, you must take it off the Meadow Grounds entirely, if so be your Meadow be moist and swabby, and in a fair dry Day, raise it up into little small Stunks in the same manner as you was directed to do when you pull'd it : This you ought to do in some dry clean place, to the end every part of your Flax may be perfectly dry and saved, When you are secure that your Flax is past the danger of heating, bind it up into Sheaves, laying it in the middle ; and stack it up in a dry Barn, to the end it may sweat for six Weeks or longer, before you use it ; which sweat will make it work the more kindly.

7thly, Flax may be prepared without watering, by grassing it until such time as the Straw corrupts ; and answers the Experiment above mentioned ; yet it is better to water it where it can possibly be done without great Inconvenience : But it is impossible to prepare Flax without grassing. The effects or influence which the Water has on it is, only that Water rots the Straw, and makes the Flax easily separate from the Straw ; but does not contribute to the making your Flax to separate one Thread or Fiber thereof from the other, wherein consists the use of grassing your Flax : For this is it that makes your Flax to be finer or courser when you come to spin it, with respect had to each species or sort of Flax. You must by no means suffer Flax to be dry'd by any Fire ; for if you do you discolour it, and render it hard and unplyable. All Artificial Heat is unequal. You cannot prevent the over-drying part thereof whilst the other is under-dry'd ; whereby your Flax is render'd in a manner useless.

8thly,

8thly, Having now prepared your Flax fit for working, the next thing is to clear it from Straw, which is best done by the help of the Mallet which you will find described at the latter end of this Book ; your manner of using it is thus : You first untie your Sheaf of Flax, and spread it about three Inches thick on your Barn Floor, which ought to be clean, dry and firm : You must be careful to lay all the Roots one way, and as even as possible ; then clap your Foot on the Flax to prevent its starting as you thresh it, and begin to thresh it at the Roots, and so proceed to thresh downwards, still removing your Foot backwards as you see occasion, until such time as you shall have threshed it to the other end : When you have done threshing that side, you must turn it, and lay the Roots as before, and proceed to thresh that side in the like manner ; by this means you will have broken all the Straws therein sufficiently. Be careful all this while not to mingle or mix the different sorts or qualities of Flax together.

9thly, Having thus broke your Flax, you must begin to scutch it, which is best done by the help of a Scutching-board and Swingle, each of which are also described at the end of this Book ; the manner of doing it is thus : You take as much Flax in your left Hand as you can conveniently hold therein, and with your other Hand you must crush and break the Straw of the Flax so as to make it capable of being put into the notch of the Scutching-board ; then put your Flax therein with the Roots foremost, and beat it with the Swingle downwards along the side of the Board, turning and winding it with your left Hand still as you scutch it, until such time as you have half cleansed it from the Straw, and no longer ; for if so be that you over-work it at the first, it will infallibly run to Tow : When that end of your Flax is done, turn the other, and scutch that in the same manner until that is likewise half cleansed ; then you must lay it aside and begin with another Handfull, and so proceed to half dress or scutch the Parcel you design to scutch.

That



That done, you must begin again by taking as much of your Flax in your left Hand as you can conveniently grasp and manage; for note that the more Flax you scutch together, the less wast you commit: Having scutched each end of the Handfull, you proceed so to do with the whole parcel you design to scutch at that time. Having thus scutched it, you must then take a Handfull of the Flax, and with the help of an Iron Instrument with notches made therein, which is of the shape of a Knife, the Figure whereof you will find at the end of this Book; you must scrape the Roots of your Flax against your Thigh till such time as you have perfectly clear'd the Roots from the Straw, and made it as pliable as the other part of your Flax; then take a blunt Knife (which ought to be extreemly blunt to prevent its cutting of your Flax) you must dress all your Flax therewith till such time as you perceive there remains no more Straw therein. Thus you have made your Flax ready for the Hackle or Brush, of each of which I defer speaking till such time as I come to mention them in the next Chapter, to prevent Repetition.

The manner of preparing Flax in this Kingdom when we came hither first was (and is still in many places) extreemly pernicious and ruinous. First it is manag'd by Women altogether ignorant as to the choice of their Seed or Soil; for which reason their Flax was and is too short and unfit for making of good Yarn. They do not know when or how to pull their Flax, whereby their Seed degenerates and their Flax wants strength and substance. They have no judgment when or how to water or grass their Flax, so as to give it a natural colour: And what is yet worse than all this, they constantly dry their Flax by the Fire, which makes it impossible to bleach Cloth made of their Yarn; for let all the Skill and Judgment of the World be used to bleach Cloth made of different sorts of Flax, you shall never bring it to a good colour, for till such time as it is woven and so bleached, the best Artist in Nature cannot discover the mischief;

for



for then it is (and not till then) that it shews it self in Rays and Streaks in the Cloth; the Owner is forced then to over-work his Cloth to bring it to colour, which is one of the main reasons why the Cloth of this Kingdom lies under a dis-reputation abroad. They also in the cleaning of their Flax make use of things which they call Breaks, which I can no way approve of, in regard it over-labours their Flax: and such things are never used beyond Seas to Flax, but to Hemp only.

### CHAP. III.

*Containing Directions, First, As to the choice of your Seed for Hemp. 2dly, As to the choice of your Soil. 3dly, The quantity of Seed. 4thly, The Female Hemp how to be used. 5thly, How to pull your Hemp. 6thly, As to the watering of Hemp. 7thly, Of grassing of Hemp. 8thly, As to Male Hemp. 9thly, As to breaking of Hemp. 10thly, Directions to preserve your Hemp Seed. 11thly, Directions concerning hackling Hemp or Flax, and the use of the Brush.*

1<sup>st</sup>, **H**EMP, as well as Flax, requires good Seed, which ought to be renewed from time to time; the best is had from *Riga* or *Nerva*. Hemp Seed is not so apt to degenerate as Flax Seed is; and by change of Soil it will much recover its vigour.

2<sup>dly</sup>, Hemp requires a deep fat brown Soil, and may be sowed on Ground newly dung'd; nay, if it is not sufficiently rich and fat, it ought to be dung'd over again: It must have the same Plowings and Harrowings as your Flax. Moist Grounds, Clay Grounds, or such as breed Rushes or Flags, are altogether improper for Hemp.

3<sup>dly</sup>, Six Bushels of Hemp Seed will suffice to sow a Plantation Acre of Land, and so proportionably. The same Sea-

son of the Year wherein you sow your Flax, you ought also to observe to sow your Hemp : Your Ground likewise must be laid level and flat, free from Ridges, for the same reason as you was told in relation to your Flax. When it's once sown and well cover'd with Earth, so as the Birds cannot come at it, you need have no further care of it until it is ripe and fit to pull.

4thly, Your Female Hemp is constantly ripe sooner than your Male five or six Weeks ; the way to know them asunder is thus : The Female only bears a Blossom, and no Seed ; the Male bears a Seed. The way to know when the Female is ripe and fit for pulling, is by observing when the Stalk as well as Leaf is grown yellow ; then that sort of Hemp is ripe : Or further, if in a fair Morning, upon shaking of the Stalks, you perceive much Dust to fall from off the Blossom, your Female Hemp is fit for pulling.

5thly, You must observe the same caution in the pulling of your Hemp as you did your Flax; for there are in Hemp as well as Flax, diversities of degrees of coarseness and fineness ; therefore in the pulling of your Female Hemp, you must take care to sort the coarsest Female Hemp together, the middle sort likewise together, and so the finest by it self. Beware in the pulling of your Female Hemp, that you do not break the Stalks of your Male Hemp, which (as I told you) will not be ripe so soon as your Female ; and by the breaking of the Stalks your Seed as well as Male Hemp will suffer. You must still, as you have a sufficient quantity of your Hemp, make small Sheaves thereof about the thickness of your Thigh, and tie them in the middle, and let them dry ; for it is a certain rule that Hemp or Flax ought never to be water'd or grassed until it is perfectly dry. If you design to water any of your Female Hemp the same Season that you pull it, you must tie it up in Sheaves about the bigness of your Waste with three strong Strings, one at each end and one in the middle : It ought to be moderately ty'd, so as you need not fear its bursting ; but at the same time not so hard

hard but that the Water may conveniently penetrate to all parts thereof. In the tying up your Sheaves, you must set the one half of your Roots one way and the other half the other way, to the end all the Sheaves may be of equal thickness. It were better that neither sort of your Hemp or Flax were water'd the same Year you pull them, unless your Occasions are pressing; but if you can forbear the watering that Season, you need not in such case to tie your Hemp into big Sheaves: But when it is sufficiently dry, so as to be out of danger of heating, you ought to stack it in a dry Barn, laying always the Roots outwards as you would do Corn; and there leave it till the Season offers for the watering of it: But all this while I would be understood that you must carefully observe to keep all your sorts of Hemp apart from each other.

6thly, When you come to water your Hemp, you must make Bundles or Sheaves, as I have already observed. I shall not need to enlarge on the watering part thereof, in regard it differs nothing from what I have already said in relation to Flax, save only that your Flax may swim on the top of the Water and be turned, but Hemp must be kept under Water so as to be cover'd, and yet not suffer'd to touch the bottom; for if it does, it will rot and perish immediately: Therefore your Pits for Hemp ought to be deep enough for that purpose, and also large, because of the great length which good Hemp grows to. You must in all other things observe the same Directions I have already given in relation to the watering of Flax; and by trying the same Experiments you was directed to make in reference to Flax, you will best discover when your several sorts of Hemp may be fully water'd.

7thly, When your Hemp is well water'd, as it ought to be, you must then take it up, and having well wash'd away the filth that clings to it, you must grass it in the same manner as you did Flax, observing the like Rules and Directions as to each quality and sort of Hemp: This is still to



be understood in case you design your Hemp for Cloth : But if you design it for Cordage or Nets, there will be no occasion for grassing of it ; but only after it is taken out of the Water, you may again stonk it till it is dry ; then stack it in a dry Barn, where you ought to let it sweat for six Weeks or two Months, that it may work the more kindly. Note likewise, that your Female Hemp is generally fitter for Cloth than your Male, because it is finer.

8<sup>thly</sup>, As for your Male Hemp, you will best discover when it is ripe and fit for pulling by the following Observations : When your Hemp Seed is become large and well colour'd, and that the Pods, or places where the Seed is lodg'd, begin to open, so as through the small clifts you may perceive the Seed therein, you must forthwith pull it without loss of time ; for a small delay may be fatal to the whole Crop both of Seed and Hemp. In the pulling it you must observe the same Cautions I gave you as to sorting your coursest Hemp together, your middle sort likewise together, and your finest must in the same manner be kept together. You must be careful as you pull your Male Hemp not to shed the Seed ; but when your Hemp is dry you ought to have a wooden Stool, with a Sheet or Blanket under it, and beat the Seed into the Sheet or Blanket, breaking your Hemp as little as may be. There is no possibility of watering the Male Hemp the same Year it is pull'd ; so that you have nothing to do with it that Year but to fit it for the Barn the same way as you was directed to do with the Female Hemp. When the Season offers for watering and grassing, you must pursue exactly the like rules I have already given in reference to the Female Hemp.

9<sup>thly</sup>, When your Hemp is fit for breaking, you must make use of Breaks, which are common in this Kingdom : They are proper for Hemp, but not for Flax. Before you break your Hemp (if the weather be dry and proper) you ought to expose it to the Sun and Air to dry it, that it may break more kindly ; but if the weather be moist and damp, you



you must then dig a Pit or Hole in the Ground about four or five Foot deep, at each corner whereof you must fix a wooden Fork, which Fork must be three or four Foot high from the Ground : On these Forks place Sticks whereon to spread your Hemp ; spread it extreamly thin ; kindle a gentle Fire in the Pit, of Hemp Straw, and therewith dry your Hemp : It will dry in a very little time : Take great care not to over-dry it ; and above all, not to scorch it. When it is dry enough, break it with your Breaks, and afterwards scutch it, as you are directed to do in reference to Flax.

10thly, After you have clear'd your Seed from your Hemp, you must be very careful (especially while it is new) to prevent its heating, which is best perform'd by very frequent turning. Keep it in a place that is dry, but not close, for the Air will help to preserve it. The like you must do with such of your Flax Seed as you are necessitated to thresh before our sowing Season comes. Thus you have the best Directions I am capable of giving how to raise and prepare your Flax and Hemp : All that remains for me to say under that Head, is to desire you (when you have scutched your Flax or Hemp, and wrought them clean from the Straw and Roots by the help of the Knife and Iron Instruments, which is described at the latter end of this Book) to tie them up severally according as the kinds and sorts of Hemp or Flax are, and put them into a place moderately dry (for the place where you keep Hemp or Flax ought to be neither too dry nor too damp) there keep them until you have occasion to use them. Note always, that the longer you keep your Hemp or Flax in this manner, the better they will work, and the Goods which they will produce will prove the better.

11thly, The hackling of Hemp or Flax is naturally and of course the next thing to be treated of : This is to be more or less done according to the use you design to apply them ; as for instance, If you design Flax or Hemp for gross or coarse Yarn, you need not hackle it in that case, but with your large

large tooth'd Hackle : If you design it for finer uses, you must begin with your coarse Hackle, and hackle it again in the second Hackle : If you would have your Hemp or Flax brought to be yet finer, you must hackle it a third time, and that in your finest Hackle. You must always work Hemp or Flax gradually, and not hackle at first with your finer or finest Hackle ; for if you do, you must expect more Tow than Flax or Hemp fit for Use and Service. When you have a mind to have extraordinary fine Flax, you must not in the least hackle it, but you must work it intirely by the help of a Brush for that purpose, made of Hogs Bristles, and stiffened artificially with Glew. This brushing of Flax does not so wear and tear it as the Hackles do, but by easie degrees separates the Threads and Fibers thereof asunder : Your Flax will be incomparably finer and longer, and with less wast, by preparing it in this manner, than if you wrought it with the Hackles. Each Spinner in *Flanders* and *France* has one of these Brushes, wherewith she dresses her own Flax after it has been prepared by the Flax-men who make a Trade thereof : This she must do to bring it up to the exact degree of finess that she designs to spin her Yarn. Any body that has a mind to make tryal of these Brushes, may be furnished with them at *Lisnegarvy* for ten Pence a piece ; a Brush will last many Years, if well and carefully used. Hemp requires Hackles with longer and larger Teeth than Flax does. If you design your Hemp for Sail-cloth, two hacklings will suffice ; and those hacklings are to be in the first and second large Hackles : But if you design it for Cordage, you must once hackle the Hemp in that case also, in the largest and courfests Hackle ; but you ought to have a Hackle with wider and stronger Teeth for that purpose than is usual : You may mix Tow together with your Hemp in the making of your Cordage ; but it were better for the Goods and for the Buyer to have them made of Hemp only ; and as for your Tow, there is no great loss therein, for each Dealer knows how to use them to Advantage. Note, that at all times

times when you are to hackle or brush Hemp or Flax, you must begin with the ends thereof which grew next the Ground, because they are strongest there ; and when they once divide there, the other end will much easier follow.

Before I close this Chapter, I beg my Readers Pardon, that after all I have said or can say on these Subjects, it is impossible to have Flax or Hemp, or the Manufactures thereof, brought to any perfection in this Kingdom, unless in convenient places throughout this whole Kingdom Persons be encourag'd to make it their business to acquire a competent Knowledge therein. In all other places of the World where this Manufacture is cultivated and courted, able Men of good Stocks employ themselves therein ; they furnish the Market ; the Spinners in those Markets provide themselves therewith. These Mens own Experience and Knowledge in all these things makes them overcome thousands of unforeseen accidents which these Materials are incident to. It is not that I value my self in these Crafts beyond the measure of Modesty, or that I would endeavour to prejudice any People in their present way of Dealing ; but I leave any indifferent Person to judge whether it is not much more eligible for the Women of this Kingdom (who may be made the best Spinners in the World) to apply themselves to that business, and give over their Application to the raising and dressing Hemp or Flax in the manner they do : They are and for ever will be ignorant how to chuse their Seed : They will never know when or how to pull their Flax or Hemp : They know not how or when to water or grass their Flax : Each of which are essential and inseparable to the goodness or beauty of the Goods. If in every County of this Kingdom a few People of robust Bodies, and of Families that were likely or able to furnish them with Stocks to set up withal, would come for one Year, or two at the most, to us at our Factory at *Lisnegarvy*, and learn of our Flax-men how to manage and raise Hemp and Flax, they would be able in a little time

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to furnish the Markets through the whole Kingdom. At the same time, if the like care was taken to send a few out of each County to learn to Spin in the best manner, we should take care to have them taught ; six Months, or at the most, one Year would compleat them. The same may be done with Weavers newly out of their Times ; one Year, or very little more, would compleat them, so as they might be able to work in our Foreign Looms. And so we would instruct Bleachers, and in short, all others that have any tendency to the Linnen Manufactory. The People that we instruct can be of no particular advantage to us that teach them, in regard we do not pretend to take from them respectively what they earn by their Work whilst we teach them. When they are taught, I shall by travelling to and fro among them, instruct them how to promote the general Trade, and prevent Abuses. This I take (in my humble opinion) to be the shortest and most certain way of promoting the Linnen Trade. This was what His late Majesty King *William* of Glorious and Blessed Memory approv'd of, when he enter'd into the consideration of promoting that Trade in this Kingdom ; and I question not but that His good Intentions to the worthy and industrious People of this Kingdom will be accomplished by Her present Sacred Majesty, if they please to apply themselves thereto heartily.

I would not from hence have any body mistake me, and infer that I am desirous to put any stop or check to the Trade or Industry of the People of the Country ; nay, far be it from me : Let all People work as they please, provided they do it with Honesty ; for I have always observed in *France*, *Holland* and *Flanders*, that Corporations set up to regulate Trade and Commerce, do much more harm than good. *Cambray* is under the regulation of a Corporation ; *St. Quintin* is otherwise, it is free : Each have their respective Trade in great perfection, but the latter is much more easie and comfortable to the Dealers ; being only subject to make every sort of Linnen Cloth of a certain length and breadth.



## CHAP. IV.

Containing, 1<sup>st</sup>, Directions how to spin Linnen Yarn. 2<sup>dly</sup>, The choice of the Wheel for Spinning. 3<sup>dly</sup>, Observations on the Reels made use of in this Kingdom. 4<sup>thly</sup>, The length of the Reels, the number of the Cuts, and the Threads in every Cut. 5<sup>thly</sup>, The Yarn to be reel'd one Thread at a time, and not several Threads at once, as is now practiced.

**T**HEY that would spin Flax or Hemp ought in the first place to suit their Flax to the Yarn which they would spin, which is a matter that requires some Experience and Judgment. The People of *Flanders*, who spin far finer than those in *Holland*, do always (when they spin) tie their Flax or Hemp on the Rock, straight down in a Line; only at the lower end of their Flax they give it a loose turn up, and so draw the Thread straight down, whereby they have the whole length of the Flax: They of *Holland* draw out their Flax in a flat round Cake (as it were) and then they tie it on the Rock, whereby their Flax is spun athwart (as for your short Flax, it must always be spun athwart, but your long Flax at length:) The People of this Kingdom, in imitation of the latter, do all spin in that manner, both their long and short Flax, which is extremely preposterous. For *first*, they can never spin so fine and so even a Thread by taking the Flax athwart, as they would do by taking the whole length of it. 2<sup>dly</sup>, They can never dispatch half the Work that way, as they would do if they spun the whole length. 3<sup>dly</sup>, Their Yarn when it comes to be made up into Cloth, by their present way of Spinning, must Cotton much more than if it was spun in our manner; because by spinning across the Flax, there are more ends every where appearing in the Cloth, which rise and start up therein, than

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there would be if you drew your Thread down the whole length of the Flax. Until the Flax of this Kingdom be brought to due length, it may be difficult to spin in the manner I am speaking of, or to make extream fine Yarn; but this and that must each be rectify'd together, if ever you design to bring your Manufacture to a Reputation.

2dly, The Spinning Wheels for Linnen Yarn commonly made use of in this Kingdom, are such as turn by the means of the Person's Foot who spins, which I take to be wrong; for it is impossible to twist Yarn equally and in all parts alike with such Wheels: Do but consider, that if your Flax be short or long, and is spun across or athwart, it never comes down from the Rock equally. Your left Hand is employ'd to guide and twist your Yarn, your right is free, and at liberty to guide and govern your Flax; yet all this while your Foot is going and the Yarn a twisting, notwithstanding while this entangling of your Flax is a removing the Yarn does not come down so fast as before; therefore must follow of consequence that some part of your Yarn does twist more than other some does: This happening very often in the Day, especially when your Flax is spun athwart or across, which occasions it much more to tangle than if it were spun down its length, as I have already hinted, judge you whether there can be an equality of twisting by using this sort of Spinning Wheels.

Whereas if your Spinner can't turn her Wheel but with her right Hand, when that is employ'd in the clearing of the Flax from any Incumbrance, the Wheel stands, and does no longer twist. It may be said in answer to this, that the Foot may stop when those accidents happen, if care and heed be taken by the Spinner; but Experience shews the contrary, that the Foot being us'd to move in a constant manner, it will insensibly continue so to do to the great prejudice of the Goods which are made of that Yarn, and to the unspeakable delay of the Weavers who work it; for by unequal twisting of the Thread, it makes it break more frequently than

than otherwise it would, and the Weaver's time is taken up in knotting and fastening his Yarn. There is yet another defect in the Wheels I speak of, which is, that they go with two Cords or Strings; the one goes round the Wheel and the whirl of the Spindle, the other goes round the Wheel and the whirl of the Spool; by which two Strings both the Spindle and the Spool are turned at the same time; which ought not to be, for that over-twists your Yarn: On the contrary, the Wheels in *France* and *Flanders* (where the finest Yarn in the World is made) goes only with one String round the rim of the Wheel, which likewise reaches round the whirl of the Spindle, and by the help of a String, one end whereof is fasten'd to the form of your Wheel, which you bring over the whirl of your Spool, and fasten at the other end to a Peg, whereon your last mentioned String is wound or turned up; you keep your Spool to as slow or as quick a motion as you please, and twist your Yarn more or less, according as it is most for the profit and good of your Yarn.

3dly, Now that I am speaking of Linnen Yarn, it will be somewhat proper to observe the manner of reeling Yarn in this Kingdom, which is one of the greatest Grievances, as it is now practiced; for many honest industrious Men are undone by the deceitful Methods now used by crafty and unfair People in this particular; as for instance, There is no Standard for the Measure of Reels, and every body uses such Reels as they think fit; for which reason a Stranger to the Market is impos'd upon to his Ruine. Now if all the Reels in the Kingdom were brought to a certainty, the Hanks would be so to, and Workmen would know how to govern themselves in their Work. If the Parliament would please to take this under their Consideration to regulate, I should think each Reel ought to be two Yards and an half in circumference; but should they be more or less, it is not essential, provided they be once brought to a certainty.

4thly, If you regulate your Reels, it is likewise requisite to regulate the Cuts that are to be in each Hank or Dozen, which will much prevent Abuse, and also further and advance Trade : Therefore if it were required by a Law that there should be twelve Cuts in a Hank or Dozen, and that each Cut should consist of Sixscore Threads, neither more nor less, this would mightily ease the Dealer.

5thly, That the Cuts and Hanks be reel'd up by only one Thread at a time, and not several Threads, as it is now practis'd, only through Laziness or Wickedness, to the utter Ruine of poor Dealers, who think they buy Yarn, and that they have good Merchantable Goods for their Money ; but on the contrary find that the whole Hank ravel all together, and becomes intirely unserviceable, or at the best, so troublesome to wind it out, that it is as eligible to lose it as to spend so much time and pains to wind it. They ought likewise to mark each Cut or Sixscore Threads still as they reel them, and not afterwards, as they now do ; which they might do without any great difficulty. They do likewise intermix in one and the same Hank Yarn of several degrees of finess, which is a Cheat that is intollerable to the Buyer.

A Law of this sort in a Summary Manner, to be faithfully and judiciously Executed, would contribute much to the advancement of the Linnen Trade in this Kingdom ; and without it, I fear, there is no hopes of ever bringing it to any degree of Perfection.

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## CHAP. V.

*Concerning weaving of Linnen Cloth in imitation of the Foreign Linnen.*

1<sup>st</sup>. *What Looms are used in this Kingdom.*

2<sup>dly</sup>, *The Looms of this Kingdom not proper for weaving good Cloth.*

3<sup>dly</sup>, *The Dutch Looms and Estilles fit for Hollands, Cambricks, &c.*

4<sup>thly</sup>, *French Looms fit for Cloth of Normandy and Britany.*

5<sup>thly</sup>, *Choice of Reeds, and Yarn fit for Reeds and Geers.*

6<sup>thly</sup>, *The way of dressing Yarn, and preparing the Stuff.*

7<sup>thly</sup>, *The Cloth as yet made in this Country too thin and sleazy.*

8<sup>thly</sup>, *The Warp to be somewhat finer than the Warp; &c.*

**T**He Looms generally employ'd in this Kingdom for the making of all sorts of Linnen Cloth (excepting Diapers and Damask) are Looms properly disposed and invented for the weaving of Woollen Cloth, save only that they changed the Geer, and wrought promiscuously Linnen and Woollen therein, according as their occasions required: Whereas a good Artist can never make commendable Goods with improper Tools, he that will weave good Linnen Cloth must suit his Looms to the nature of the Cloth which he designs to make; as for instance, He that would make a strong substantial Holland, can never do it with one of our Estilles or *Flanders* Looms: Or on the other hand, He that would make a Cambrick, Baptift or Lawn, or *French* Holland, shall never make them on *Dutch* Looms: Therefore in *Holland* they have one sort of Looms; in *France* and *Flanders*, where they make your plain, or spotted, or strip'd Cambricks, they

they have another sort of Looms which they call *Estilles* : In *Normandy* and *Brittany* in *France* they use also a third sort of Looms : All these employ their Industry in different sorts of Linnen Cloth, and have fined and refined thereon for many hundreds of Years ; you may easily judge that their Experience has brought the Mechanick part of this Trade to as great perfection as it is possible ; at least, I may say without being thought a Favourer of those Foreign Customs, that it is better for us in this Kingdom, who are to begin a Trade, to begin that Trade and Manufacture upon the same Foot as they are now abroad ; for should our Peoples Genius lead them to amend and meliorate the ways of our Craft in this Kingdom, still it would be the easier for them to do it when they are conversant with the manner of other Countries and Nations. The Structure of the Looms is so essential to your Work, that you will be convinced thereof by one single instance.

2<sup>dly</sup>, Suppose you were to weave the Linnen Cloth (commonly call'd *Holland*) in one of the Looms of this Kingdom ; the Beams are set so far asunder, and the Loom it self so slight (which can't be otherwise if you design therein ever to weave Woollen) that you can never make your Cloth firm and substantial ; for the nearness of the two Beams in the *Dutch* Looms makes the Warp lighter and firmer, and the force of the Leath is much greater on your West, and strikes it closer with one blow than you could possibly do with many Strokes of your Leath in your common Loom. Woollen Yarn or Worsted can by no means bear such rough and hard usage ; therefore it is impossible to use one and the same Loom to both the Materials with good Success : But further, Your *Dutch* Looms are made with a much greater quantity of Timber than your common Looms of the Country are ; which makes them firm, and unapt to shake or yield with the force of your Work ; whereas your Looms are made slight on purpose for the soft and tender nature of your Woollen Materials.

3<sup>dly</sup>, The *Dutch* Looms, as I have already observed, are proper for *Holland* Cloth, but no way proper for your fine *Baptists*, your *French* *Hollands*, your *Cambricks*, &c. each of which is made up of finer Yarn than *Holland* Cloth is ; therefore the *Estilles* are found by experience to work such fine Yarn better.

4<sup>thly</sup>, There is yet a third sort of Loom which is used in *Normandy* and *Brittany* in *France*, which differs in its Structure from that of *Holland*, because the Cloths they make in those Provinces are never fine : Such differences as there is in their Looms I will acquaint my Reader withal, and make him best comprehend by the help of the Models engraved at the end of this Book, and the Notes thereon, to which I refer him.

5<sup>thly</sup>, Your next care is to make choice of your Reeds, to the end that the Teeth be even, and not too thick ; therefore good Reed-makers ought to be encourag'd. It is impossible to make a good Cloth in an unequal and uneven Reed ; neither can the best Workmen in the World make a good Cloth without good Geers, which are but badly made in this Kingdom : The Geers generally us'd in *Ireland* are made of over-course Thread for weaving of extream fine Yarn. Course Geers are stiff, and over-labours your Yarn that runs between the Threads your Geers are made of : It is much better to have Geers that are too fine, than too course ; for the Cloth will last longer by so much as you save or keep your Yarn from breaking, and consequently recommend your Goods to the Buyers ; and you will save your selves much labour and time which would be taken up in knotting your Warp at every turn.

6<sup>thly</sup>, The way of dressing the Yarn in the Loom while it is weaving, is extremely bad in *Ireland* ; for they make a stuff of Water and Meal, without Judgment, wherewith they stiffen their Warp : Now in *France* and *Flanders*, &c. they are extremely curious in the making that Stuff wherewith they dress their Warp ; I have therefore given them here the way of making of it. They must take as much  
Wheat-

Wheat-flower, and mingle it with cold Water, as will make the Water as thick as Past; this they must boil on the Fire for two Hours at the least, taking care all that time to keep it stirring, that it does not burn: If it becomes too thick or too thin, they may help it by adding thereto more Water or more Flower as occasion is; but then they must (after such addition) boil it at least half an Hour: When it has boyl'd sufficiently, pour it into a clean Earthen Vessel; where you ought to let it stand till cold: When it is cold, you may make a Hole therein sufficient for you to put some part of your old sower dressing Stuff, thereby to leaven the rest, which will set it a working: When it has fermented for five or six Days, or more, then incorporate the whole together, and use it as you have occasion. Note, that the older and staler your dressing Stuff is, it is so much the better; wherefore you ought always to have a quantity before-hand of it.

7thly, I observe that always the Weavers of this Kingdom do generally make their Cloth too thin and sleazy, which happens frequently from ignorance; for he that would make a good Cloth ought to suit his Reed and his Yarn together; For Example, If a Man were to make a Warp of Fourteen hundred Threads in breadth, and instead of Yarn of Fourteen hundred, he chuses Yarn of Fifteen or Sixteen hundred; in such a case the Yarn could not be sufficient to fill the spaces of his Reed, and his Cloth will be sleazy and thin. It is a madness in any Weaver to stint his Warp of its due proportion of Threads: There's hardly any Weaver but ought to have regard to his own Credit, and that of the Country, beyond a small selfish Profit, which will not half so soon enrich him and his Family as a good Name and honest Dealing.

8thly, Your Weft ought to be always somewhat finer than your Warp. Let the Weaver hold his Foot firmly and strongly on his Treaddles whilst he weaves, and likewise be careful each time he throws the Shuttle, that he draws the



the Thread streight and light to the Cloth he weaves, before he strikes with the Leath, or removes his Feet : This will spare him a great deal of Yarn in his Weft, and make his Cloth firm and lasting. There's but one thing more that is requisite to be spoken of in reference to the Weaving part of fine Linnen, that at present occurs to my Memory, which is, that each Weaver in this Kingdom, who designs to follow that way of Trade, ought to have a Cellar (or some such place) under Ground to work in ; for it is impossible for any Man (were he the best Artist in the World) to weave fine Linnen Yarn, unless it be in a close place ; but that the weather shall affect such Yarn, and cause it to break and snap every moment.

## CHAP. VI.

*Containing Directions for the Advancement of Bleaching of Linnen Tarn and Linnen Cloth within this Kingdom, Materials fit for it, and the way to make use of them.*

**T**He well bleaching of Linnen Cloth and Yarn in this Kingdom is one of the most essential and most requisite Mysteries to be explain'd and taught in the whole Manufacture, as being the thing of all others wherein the Dealers are most ignorant : The giving a good colour to Cloth (it is true) beautifies it, and recommends it to the Buyer ; but the true and proper bleaching of it, so as neither to over-work nor under-work it, entails a lasting Reputation on it, giving it such a colour as shall hold, or what is still better, that shall improve still in the use and wearing, is what ought to be desir'd by good Artists. The first thing to be bleached is the Yarn before it is woven, which ought not to be after the manner now practic'd in this Country : First, they make use of improper Materials, as Lime and Kelp, to bleach with-  
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al; the first burns and destroys the Yarn, so that it shall never acquire a good colour; the latter (being made of Seaweed) has contracted so great a quantity of Salt, and is of so corroding a quality, that it eats and destroys all the substance of the Yarn.

Admitting their Materials were good, their manner is bad; for they mix their Ashes and their Yarn together in the Kieve at the same time that they buck their Yarn; and purely through Ignorance or Laziness, which makes their Yarn fret and cotton for ever. Therefore the proper Materials for Cloth of value are your Wood-ashes, which is a certain sort of Ashes which are brought from *Muscovy* and *Germany*, and your Cassoup, which are also brought from *Dantzick*. The common Wood-ashes and Weed-ashes made within this Kingdom, for ordinary course Cloth or Yarn, are as good as the best; the Foreign Ashes being much too dear to be made use of, unless it be in bleaching Cloth of Price and Value. He that would bleach well must be provided with a convenient Bleaching-yard and Bleaching-house, and all things suitable; for Shifts in Trade fail in the event: He ought to have his Bleaching-yard well watered, both as to the nature of the Water, and likewise as to its Scituation. As to the nature of the Water, it ought to be soft, such as will bear Sope. As to its Scituation, it ought to be such as in the drowth of Summer his Trenches and Pipes may be constantly supply'd. As for his Bleaching-house, it ought to be furnished with good Coppers and Boylers, good Kieves for Bucking, and also Stands and Fatts for the keeping of the Lye, according to the several sorts and degrees thereof; and other great Stands and Fatts for the keeping of the Milk, and for milking your Cloths in. They who are disposed to erect one of these Bleacheries, may with much greater Satisfaction come and view our small Bleachery at *Lisburn*, which may serve as a Model, than bestow the time of reading an intricate Description of what a Bleachery consists, which would require a long Treatise by it self, and would less in-

struct

struct a curious Person than half an Hours time spent in viewing it ; for which reason I decline troubling my Reader therewith.

I will therefore suppose him to be well provided with all Requisites, and endeavour to instruct him the best I can how to employ them to his own and the Publicks best Advantage.

In the bleaching of your Yarn you must first open each Hank, and lay them in your Bucking-keeve ; then cover your Yarn with cold Water, where you should let them steep for about nine Hours time ; let go that Water by the means of your Spigget and Fofset, which ought to be at the bottom of your Keeve, and then fill it again with Water : Continue thus to steep and cleanse your Yarn from its filth till such time as you perceive that the Water is no way foul'd that comes from your Yarn ; then withdraw your Yarn from out of your Keeve, and rince it well in clean Water ; after rincing it you must wring out all the Water by wringing three or four Hanks at a time ; then lay it out to dry in your Bleaching-yard, but be sure never to beat or Beetle it. By the time your Yarn is perfectly dry, you are to be provided with Lye proper for Bucking ; the first Bucking which you give your Yarn ought to be with your strongest Lye : Your Yarn being perfectly dry, you must dip three or four Hanks at a time, and lay them in your Bucking-Keeve, in the most equal and even manner that possibly you can ; never pressing them too much, to the end the Lye may the better pierce and penetrate them. All your Yarn being thus laid in your Keeve, put the remainder of your Lye in which you dipt your Yarn into a Pot or Pan, and make a slow Fire under it, taking care not to heat your Lye for the first five Hours whilst you are thus Bucking, but that you may be able to endure your Hand therein. Your Fire made, you must very often lade and pour your Lye out of your Copper into your Keeve ; then you must increase your Fire gradually and slowly, so as in four Hours time more to bring your Lye to boyl ;

during all which time you must continue to lade your Lye from out of your Copper into your Keeve. When your Lye begins to boyl, you must let it boyl so for three Hours more, during the whole time lading your Lye from out of your Copper to your Keeve ; so that on the whole matter you will be twelve Hours Bucking your Yarn : If your Lye was strong and good your Yarn will be brought to a yellow colour, which it will not always do, because of the improper preparing of some Flax ; therefore where you find your Yarn, or part of it, does not attain to this yellow colour, you must repeat Bucking until it does answer your ends. When your Yarn is sufficiently buck'd for your purpose you must take it out and rince it in cold Water, and wring it well, taking care to wring but three or four Hanks at a time, that it may the better endure the Labour : Be sure never to beat or beetle it, as the People of this Country do : Then spread it out on your Bleaching-yard, where it must lie expos'd to the Weather for three or four Days before you turn it : When that time is over, turn it, and let it lie there till it be of as good a colour as the other side. You must water Yarn on the Bleaching-yard as you do Cloth, that it may whiten the sooner, and lie least upon the Green. This bleaching which was just now prescrib'd to be given to your Yarn, is not intended to make your Yarn too white, but chiefly to cleanse it from the filth which is incident to it, that your Cloth may be better and stronger, and with more ease brought to a colour when it comes to be bleached ; wherefore we do thus constantly bleach our Yarn before we pretend to put it into the Loom, except for Cambricks and Lawns, the Yarn whereof must never be bleached before it be woven.

As to the bleaching of your Linnen Cloth, you must begin therewith as you did with your Yarn, by steeping it in cold Water in your Keeve for nine Hours ; and then fill it with cold Water till such time as you can perceive that the Water is no longer discolour'd ; rince them and wring them, and



and lay them out to bleach in your Bleaching-yard, observing constantly to water them so as never to suffer them to be too dry: When they have lain three or four Days thus on the Grass, and being dry, you must take hold of each Piece (one after another) by the Selvidge, and draw the Cloth to you, still holding it in the most even manner that you can, until you come to the further end; with the corners of which further end you tie your Cloth very loosely in the middle of the Folds, and so lay it in your Bucking-keeve with the two Selvidges upwards: This you must do until such time as you have placed as much Cloth in your Keeve as will cover the bottom thereof, taking great care never to pack it so close but that your Lye may penetrate to all parts equally of your Cloth. Note, that you must never buck your Cloth but when it is very dry, if possible. When you have laid thus your first range of Cloth in your Keeve, you must pour as much Milk-warm Lye thereon as will sufficiently soak through all parts of your Cloth; then you must lay another range of Cloth in the same manner as you did the first, and pour on more cold Lye until that be soak'd as the other was; continue so to do until your Keeve be full: That done, you must begin to Buck for twelve Hours together, observing the former Directions (in relation to the Fire) as are already given in the next preceding Article. Note, that your two first Buckings ought to be of very strong Lye; but afterwards you ought to abate of that strength in measure as your Cloth grows near to its perfection of whiteness: And you must beware how you use over-strong Lye after the two first Buckings, lest you make it rotten and unserviceable. After each Bucking you must carry it straight to the Bleaching-yard, where it ought to lie Forty eight Hours; thus you must do ten times successively, or thereabouts, according to the nature of the Cloth, from the Buck to the Bleaching-yard, and from the Bleaching-yard to the Buck, before you begin to use it with Milk; still giving it weaker Lye after the two first Buckings, and constantly

constantly observing to water your Cloth on the Grass, so as never to suffer it to be dry during these Bleachings. It is impossible to prescribe a certain rule or number of Buckings that ought to be given to Cloth, because that depends on the sorts or kinds of Cloth which you are to bleach; and therefore the Experience and Judgment of the Bleacher must much guide him therein. Your thin fine Cloths will bleach much sooner than your coarse or stiff stubborn Cloths will do; therefore I say that about ten Buckings and Bleachings will fit your Cloth for the Milk. Note, that your Cloths must be extream dry when you put them into the Milk.

The milking of Cloth is a mighty Novelty to this Kingdom, but yet it is found by experience in *France* and *Holland* to contribute much to the bringing their Cloth to a good colour; therefore I will venture to recommend it as a Requisite to good Bleaching. I have already told you that you must have large Keeses or Patts for the keeping of your Milk: These Fatts ought to hold a Tun or two a piece, which you ought to keep full of Butter-milk, Skim'd-milk, Whey, and the like, for your purpose; mingling all these Milks together, where they ought to stand and sower, from time to time, until you have occasion to use them. It is very rare that your Milk proves too sower; but if at any time it should, you must abate it by adding thereto cold Water, as much as you shall judge requisite. When your Cloth is dry, and ready to be milk'd, you ought to have a great Kieve half way set in the Ground; when you are to steep your Cloth, which being well soak'd therein, you must press them down by the help of heavy Planks and Weights, so as your Cloth may not be rais'd by the fermentation that will be in your Milk. When the Cloth has lain a while, take care that these Weights be sufficient, for it is scarce possible to imagine what a force this Milk has, for it will throw the Cloth out of the Kieve. You must also be careful that your Planks be neither of new Oak or Alder, for those Woods spoil and stain your Cloth irreparably.

Thus

Thus your Cloth must steep for at least Forty eight Hours, or if you please, for three Days and three Nights, for it will be so much the better for the Cloth; then spread it on the Green, and water it well to prevent it from drying with the Milk in it. When the Milk is well out of your Cloth by watering, then you must rince it well, and wash it well with Soap-lather. Your next business is to buck the Cloth again just as it comes from the Soap-suds; and when buck'd, you must without further rincing spread it on the Grass in your Bleaching-yard; there it must remain expos'd to the Air for two Days and two Nights, and be constantly watered in the Day time. Each time you lay them out to bleach, thus you must do for six, seven or eight times successively, until such time as you perceive your Cloth is come to the colour you desire to give it; that is to say, you must milk, then grass, then wash, then soap and buck alternatively, until you attain your ends. For it is impossible to propose a certain rule therein for the former reasons, in regard of the great variety of Cloath: Only this rule must be observ'd, that each time you buck you must spend twelve Hours, during all which time you ought to be constantly lading the Lye into your Keeve, according to my former Directions; for otherwise you may chance to burn your Cloth, especially when the Lye grows hot. This rule is also constantly to be observ'd, that your Cloth be very dry when you lay it in the Milk; the last time that you milk your Cloths you ought (instead of the usual washing or rincing that you give them) to lay them in an open Cistern, where People with clean Feet should tread and foot them very well for half an Hour, or thereabouts, constantly keeping them in the Cistern still as you tread and work them: That done, wash them with clean Water until you perceive the Water to be no way discolour'd; then having made your Bucking-keeve extreemly clean, you must lay your Cloths therein, just as you did at first, and steep them there in warm Water for an Hour; then let go that Water, and steep them  
a second



a second time in Water somewhat warmer, where they ought to steep for an Hour longer : Let that Water go likewise, and steep your Cloths a third time in Water yet warmer than the former ; but still observing that even the last Water must not be so hot as to boyl : This last steeping need not be near so long as the former, half an Hour is sufficient : That last Water removed or run away, take out your Cloth, rince and wring it well, to the end it may be cleansed from the Lye, Milk and Soap, and more susceptible or apt to draw in the Starch and Blue, which is the next thing to be done.

It is impossible to prescribe a set certain Rule for the preparing of Starch wherein to dress your Cloth, because of the great variety of Cloths which must be made if this Trade proceeds to any Perfection ; for fine thin Cloths require a thicker and more substantial Starch than courser Cloths will do, therefore it is requisite that Bleachers should have some Experience and Knowledge therein : Every Landress knows how to make Starch, and prepare it for the beautifying of her Linnen ; but the Starch made use of in our Trade is never so thick as that of theirs. The way we make it is thus : You must fill the Boyler wherein you design to make your Starch, about three quarters full of Water ; when the Water boils pour into it as much Starch dissolv'd in Water as will compleatly fill your Boyler ; keep it perpetually stirring, lest it burn, and let it boyl for half an Hour, or thereabouts ; then take it off the Fire, strain it into another Vessel with warm Water in it, in proportion to the Cloths you design to dress, taking great care to keep it stirring, breaking and dissolving the clods of Starch therein, that the whole may be of an equal thickness or consistency : That done, you must mix Powder-Blue in other Water, in such quantity as you would give your Cloth a higher or a lower colour, and therein you must mix your Starch as aforesaid prepared : Thus you may make your Starch thicker or thinner as you see most for the benefit



fit of your Cloth. Take great care never to use your Indigo or Stone-Blue, because it gives a fullen dark colour to your Cloth.

When you have thus prepared your Water for starching and bluing your Cloth, you must put your Cloth therein ; and when they are well soak'd, take them out, and wring them very hard, and lay them extended on the Grass in your Bleaching-yard to dry. You will generally find that the Blue will settle in some parts of your Cloth more than in other, in which case you must with a clean Cloth wet with your blue Water, rub such part thereof until you bring it down to the colour it ought to have. Your Cloths being now well starched and blued according to the circumstance or nature thereof ; and being extreamly dry, you must fold them : If you would fold them in the same manner as Foreign Cloths are folded, you ought to have a Press proper for that purpose as they have in Foreign Countries ; if not, you must content your self to make them up in the same manner as is now practiced in this Kingdom.

Before I conclude, I think it requisite to add a word or two in reference to your preparing of Lye wherewith to buck your Cloth. I formerly told you that the best Ashes yet known in the World are your Wood-ashes and Cassoup : It is impossible to prescribe a Rule therein, as that an entire ignorant Person in the Bleaching Trade should be made perfect thereby ; for it is in this as in brewing of Beer or Ale, an indispensable Requisite that the Person employ'd should have Experience and Judgment enough to know the Goodness or Imperfection of the Materials to be employ'd. We do constantly judge of the Force and Strength of our Lyes by our taste or touch of them on our Tongues ; but those who have occasion to make use of Wood-ashes and Cassoup will find that the following Directions will be helpful to them. Cassoup and Wood-ashes are extream hard, therefore you must reduce them severally into Powder ; then to each Hogshead of boyling Water in your Furnace you must

put Fifty or Sixty Pound Weight of Cassoup, if you design to make a Cassoup Lye ; or the like Weight of Wood-ashes, if you have a mind to make your Lye of that Material ; and so in proportion as to the quantity you would make. Having boyl'd your Ashes therein for half an Hour or thereabouts, you must withdraw your Fire from out of your Furnace, that your Lye may settle, which it will not do whilst there is Heat under it : The Liquor being clear, you must gently skim it off the Ashes, and put it into a Fatt for that purpose, where you must keep it apart from the rest till you have occasion to use it : That done, you must put the like quantity of Water into your Furnace as at first, and boyl that likewise in the manner as you did the first ; and when it is settled, you must skim it as formerly, and put that into another large Fatt, which ought to be twice or thrice larger than your former, because you must mix your second and your third Lyes together : Your third is made as the two former. These two latter Lyes are strengthened by adding thereto as much of the first Lye as you will judge necessary to make it sufficiently strong. Take this caution along with you, that the danger is not near so great in the having of your Lye somewhat to small, for that may be supply'd by re-bucking your Cloth : But if it should happen to be over-strong, it will burn and destroy the whole. By taking of these three Lyes from your Ashes, you will not have extracted the entire Strength of your Ashes ; therefore you must afterwards take them out of your Boyler, and lay them in a Keeve like unto a Brewing-keeve wherein your Brewers mash their Drink ; and having fenced the bottom of the Keeve with Straw, to prevent the Ashes clodding about the Hole, you must put your hot or cold Water therein, and let it be well mash'd together ; and after Twenty four Hours soaking, or as you want it, let it go just as you would Wort : This you must repeat while you find that there is any strength in the Ashes, and keep all these several Lyes together where-  
with.

with you may abate of the force of your stronger and strongest Lyes in proportion as you find your Cloth to grow nearer and nearer the colour which you would give it. You will find that these Wood-ashes and Cassoups, after you have extracted all the Lye you can, to be of admirable use to manure your cold Lands.

There is a great difference between Cassoup and Wood-ashes; the first being of a hard harsh quality, is properest for your first Buckings, before you put your Cloth to the Milk it searches and pierces the Cloth with more force than the other; but after milking the Wood-ashes is the properest, in regard it does by its soft oyley Quality nourish the Cloth at the same time as it cleanses it from its filth. The Cassoup, if used after the milking of your Cloth, may make it too thin, or over-work it; therefore I recommend the use of each in their proper Seasons: For nothing does so effectually bring Goods into Reputation, and advances Trade, like an honest conscientious discharge of Duty in a Dealer.

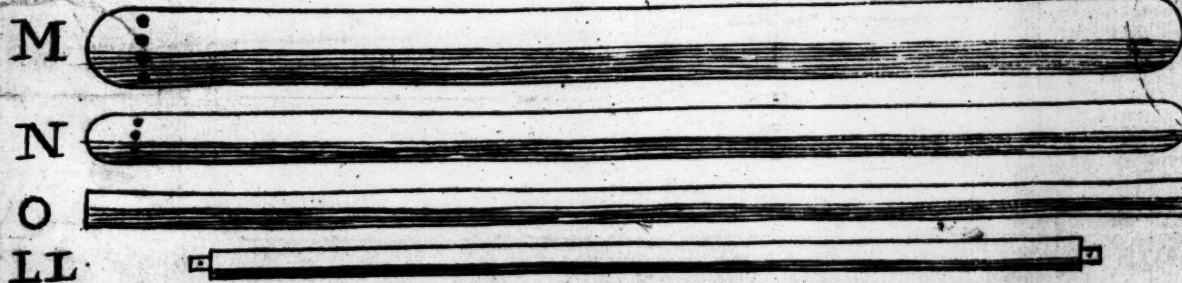
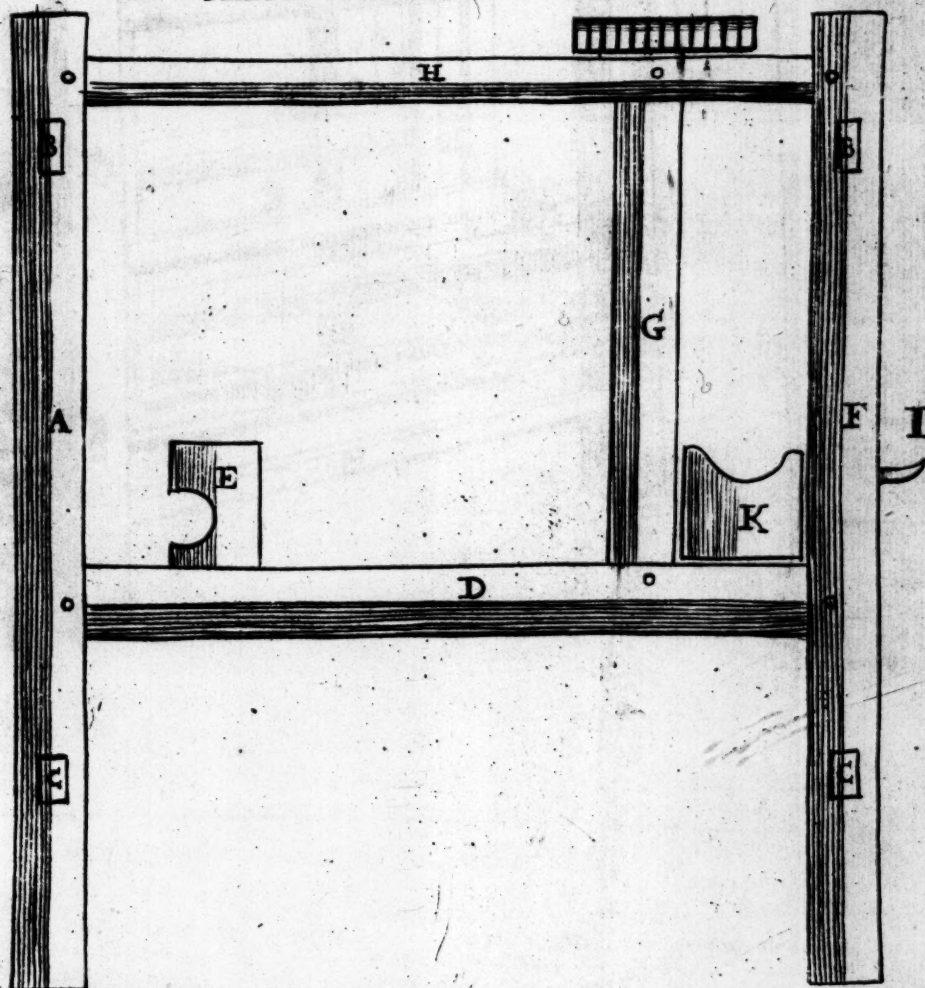
## *The Dimensions of a French Loom.*

- A A Streight Post six Foot high, five Inches square.  
BB Two Mortaisses for the cross Bars, eight Inches and an half from the top.
- C C Two Mortaisses for the cross Bars, seventeen Inches from the Ground.
- D The Side four Foot five Inches long without the Tenour, and five Inches square.
- E The Nog, the Stay, the Breast-beam nine Inches high, six Inches and an half broad, and five Inches thick.
- F A streight Post six Foot high, and five Inches square.
- G A streight Post betwixt the cross Bars three Foot three Inches high, and three Inches square.
- H A cross Bar four Foot five Inches long without the Tenour, three Inches thick, and four Inches from the top.
- I Two crooked Pins to hold the Yarn-beam.
- K A Nog to raise the Yarn-beam, nine Inches high, five Inches thick, and nine Inches broad, to make use of when you will, shortning your Work.
- LL Four cross Bars five Foot four Inches long without the Tenor, and three Inches square.
- M A Yarn-beam six Foot and an half long, and eighteen Inches in circumference.
- N A Breast-beam the same length, and fourteen Inches in circumference.
- O A Cloath-beam the same length, and eight Inches in circumference.



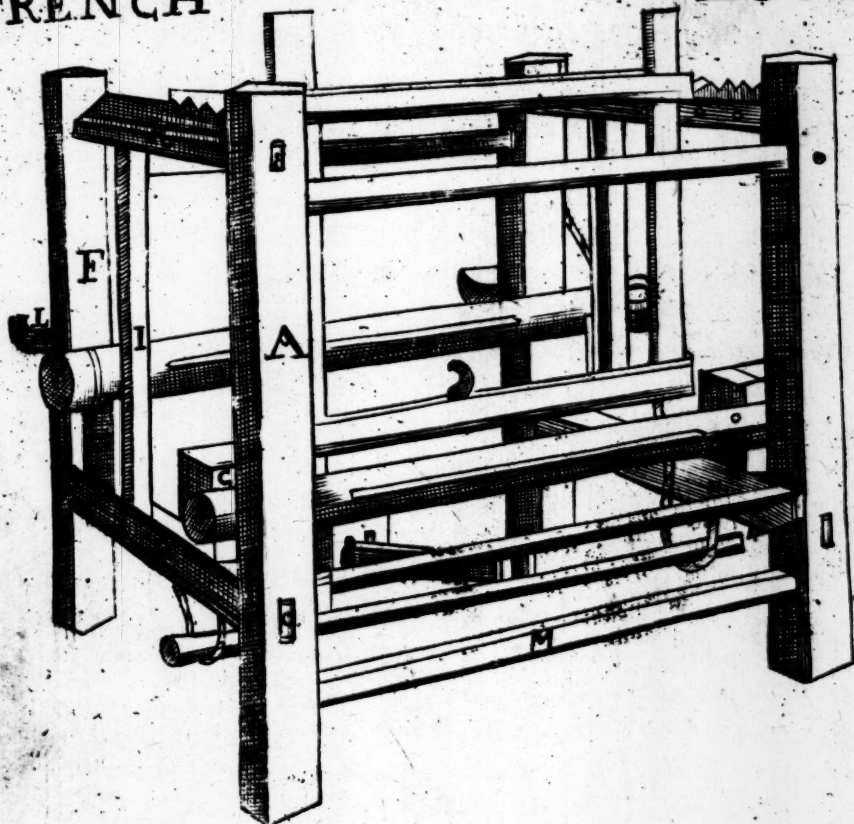
# THE SIDE OF FRENCH LOOM

THESE ARE THE \* SCALE OF ONE FOOT



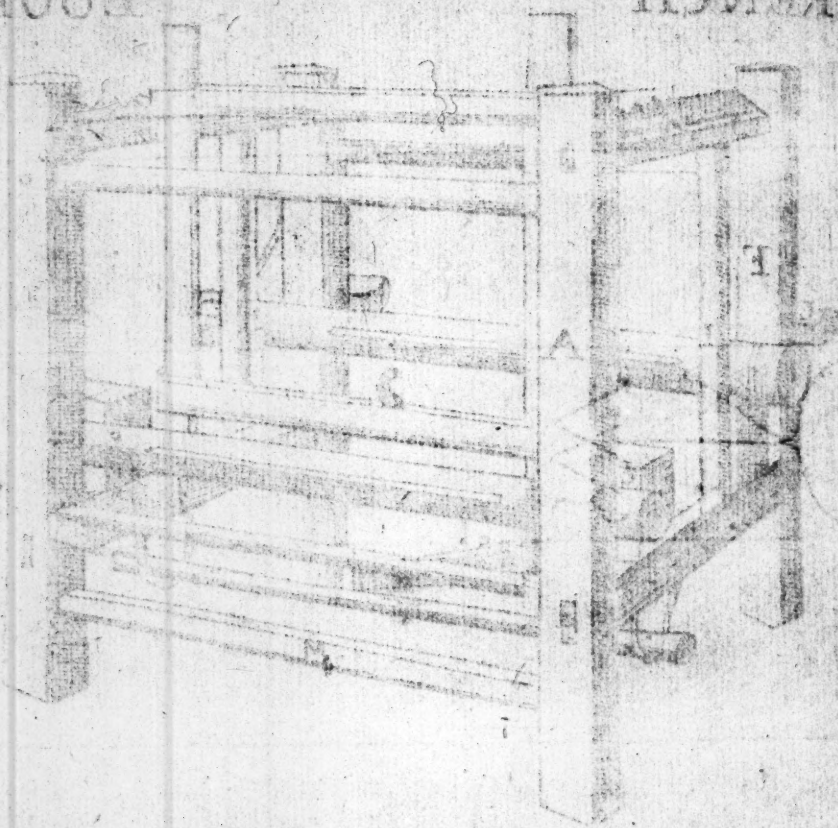
FRENCH

LOOM



BOOM

TRINCH





# The Dimensions of the Loom call'd Effille.

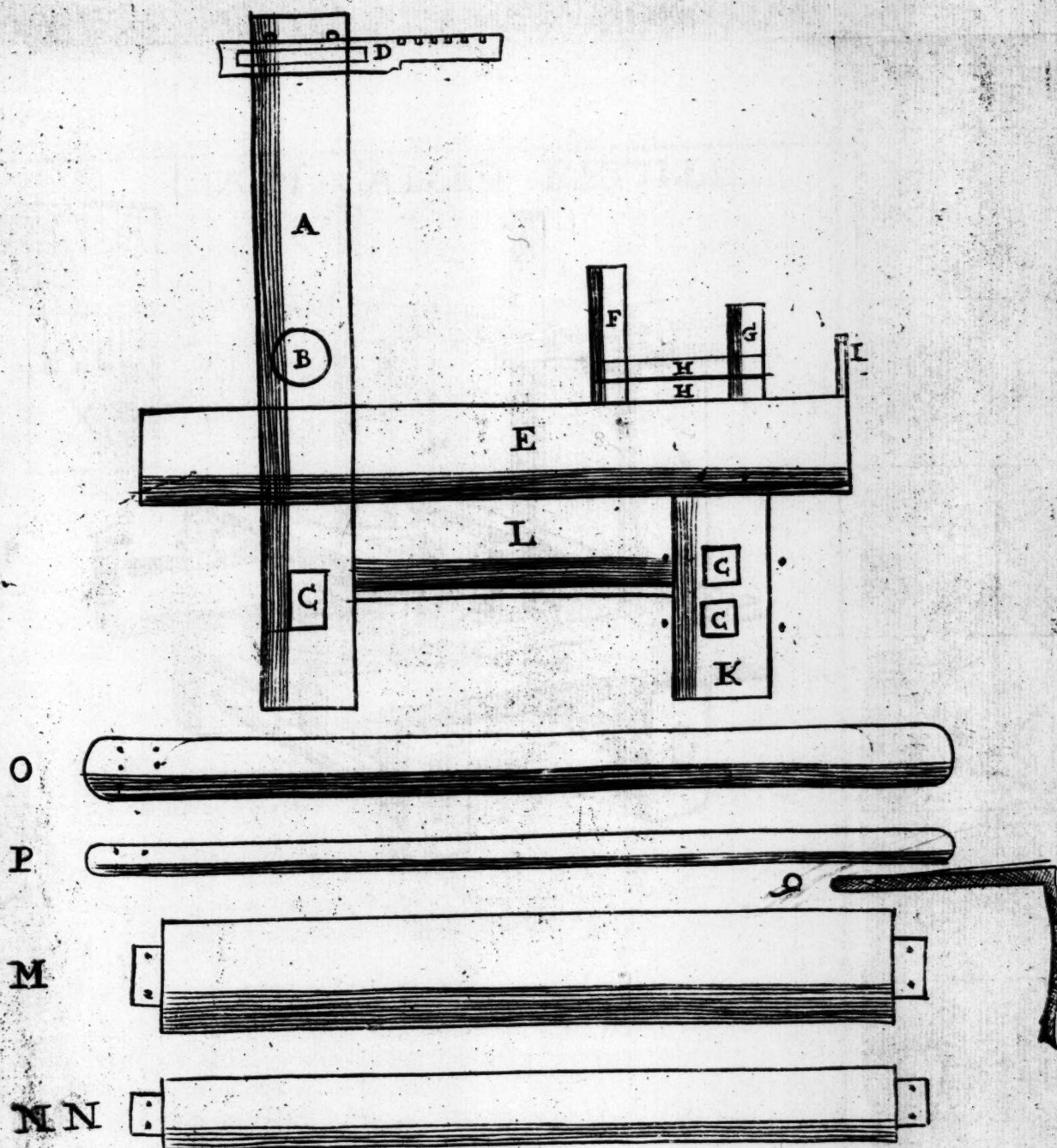
- A** The freight Post five Foot high in all, eight Inches broad and seven thick from the Ground to the side Post; then three Inches thick to the Cap, and but one Inch thick to the top for the Cap to go in.
- B** A Hole for the Breast-beam to run in.
- C** Three Mortises for the Hat Bars.
- D** The Cap two Foot long, three Inches square, and a long Mortise to go to and fro.
- E** The side Post five Foot long, seven Inches broad, and eight thick.
- F** The Nog to stay the Yarn-beam twelve Inches high, four Inches broad, and two thick.
- G** One Nog to stay the Yarn-beam for dwelling, six Inches high, the like breadth and thickness.
- H** A thick Piece or two to raise the Yarn-beam, the same breadth as the side.
- I** A Plank to lay in or out.
- K** One Foot eighteen Inches high without the Tenons, eight Inches broad and seven thick.
- L** A Box within the Loom.
- M** One Hat Bar five Foot long without the Tenons, nine Inches broad and three thick.
- N** Two Hat Bars five Foot long without the Tenons, six Inches broad and three thick.
- O** One Yarn-beam six Foot two Inches long, and sixteen Inches in circumference.
- P** One Breast-beam the same length, twelve Inches in circumference.
- Q** One Bar-staff for the said Loom.



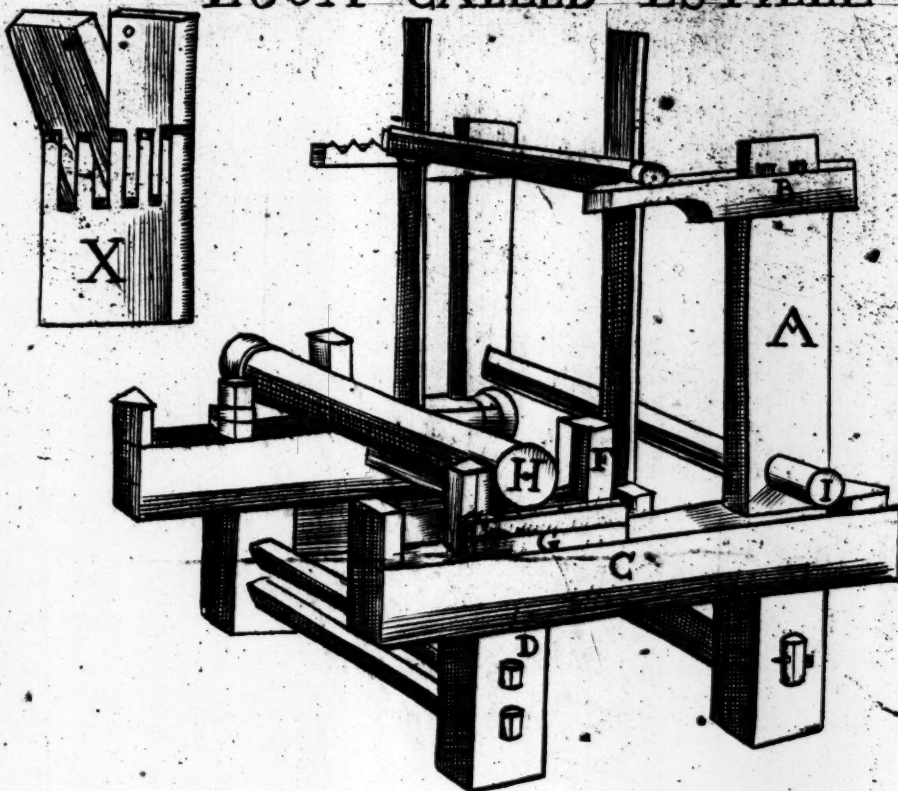
## *The Dimensions of the Loom call'd Estille.*

- A **T**He streight Post five Foot high in all, eight Inches broad and seven thick from the Ground to the side Post; then three Inches thick to the Cap, and but one Inch thick to the top for the Cap to go in.
- B A Hole for the Breast-beam to run in.
- C C C Three Mortaises for the flat Bars.
- D The Cap two Foot long, three Inches square, and a long Mortaise to go to and fro.
- E The side Post five Foot long, seven Inches broad, and eight thick.
- F The Nog to stay the Yarn-beam twelve Inches high, three Inches broad, and two thick.
- G One Nog to stay the Yarn-beam for dressing, six Inches high, the like breadth and thickness.
- H H A thick Piece or two to raise the Yarn-beam, the same breadth as the side.
- I A Plank to slip in or out.
- K One Foot eighteen Inches high without the Tenour, eight Inches broad and seven thick.
- L A Box within the Loom.
- M One flat Bar five Foot long without the Tenour, nine Inches broad and three thick.
- N N Two flat Bars five Foot long without the Tenours, six Inches broad and three thick.
- O One Yarn-beam six Foot two Inches long, and sixteen Inches in circumference.
- P One Breast-beam the same length, twelve Inches in circumference.
- Q One Bor-staff for the said Loom.

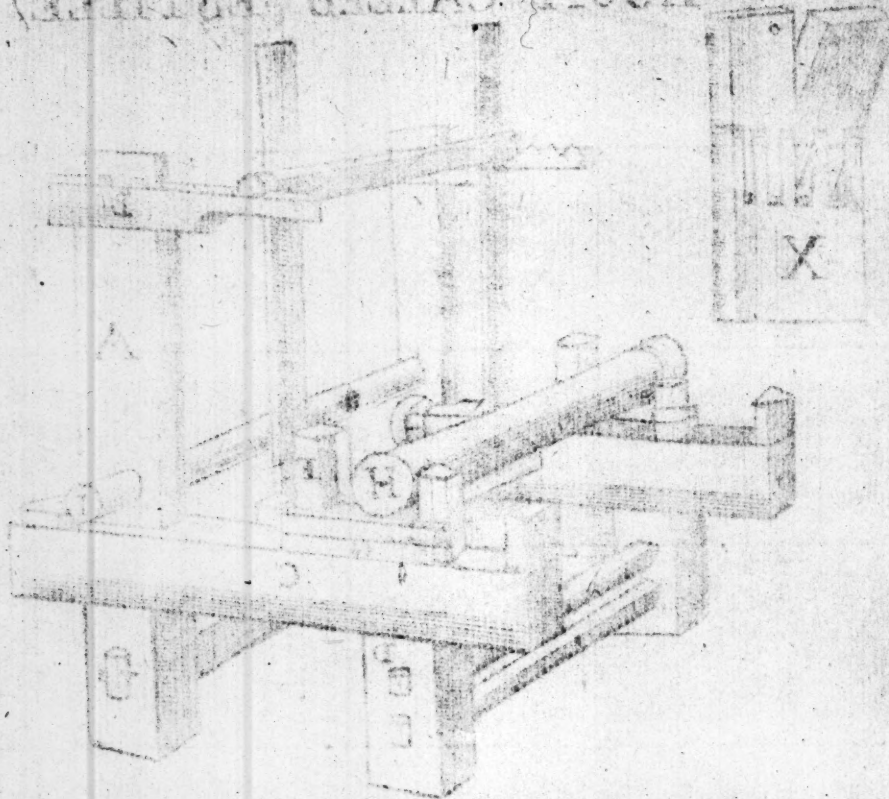
# THE SIDE OF A LOOM CALLED ESTILLE



# LOOM CALLED ESTILLE



WOOD-CALLED FISHING





# The Dimensions of a Dutch Joist

- A** Scantling-board four Foot high, one Foot three Inches broad, one Inch and a quarter thick, with a Notch squared under, and the Board standing a little sloping outward.
- B** The Foot of the Scantling-board two Foot and an half long, one Foot three Inches broad, and three Inches thick.
- C** The Scantling handle is to be made of Walnut-tree, about the thickness of a Crown Piece, without Knots; the true Dimension thereof to be four times larger than it appears in the Figure.
- D** The Knife to be made three times bigger than it appears in the Figure.
- E** The Brull to be made three times bigger than it appears in the Figure.
- F** The Mallet for breaking Flax to be one Foot long, four Inches broad, and three Inches thick, with the Handle to be made as in the Figure.
- G** Another Mallet to beat Steel, one Foot long, four Inches broad, three Inches thick, with a Handle to be made as in the Figure.
- H** A Cloath-beam five Foot long with the Wheel and the two Gudgeons, circumstance.
- I** A Yarn-beam five Foot long without the Round, twelve Inches in circumstance.
- M** Two flat Bars five Foot long without the Round, fourteen Inches broad, and two Inches thick.
- N** A Yarn-beam six Foot and a quarter long, seven Inches in circumstance.
- O** A Yarn-beam five Foot long without the Round, twelve Inches in circumstance.
- E** An Iron Pin with a Screw for a Board of three or four Inches broad, and one Inch thick, to go from one side to another.
- K** One Foot five Inches high, without the Round, eight Inches broad, and three and an half thick.
- M** Two Mortises for the flat Bars, seven Inches long, and two broad.
- B** An Iron Hook for the Chain-beam to run in.
- D** A Board to draw out to lengthen the drawing.
- F** The Nog to stay the Yarn-beam six Inches high, and five sloping upward.
- E** The Hole in the Nog for the Breast-beam to turn in.
- D** The Nog to hold the Breast-beam nine Inches high, four and an half broad, beam without the Foot, three Inches and an half thick.
- C** The side three Foot and an half long, two Foot four of five Inches high at the end without the Foot, and eighteen Inches high at the Breast-beam without the Foot, three Inches and an half thick.
- B** The Cap eight Inches and an half broad, two Foot nine Inches long, and three Inches and an half thick.
- A** Straight Post one Foot high without the Round, eight Inches and an half broad, and three Inches and an half thick.

## The Reference to the Flax-dressers Tools.

- A** Scantling-board four Foot high, one Foot three Inches broad, one Inch and a quarter thick, with a Notch squared under, and the Board standing a little sloping outward.
- B** The Foot of the Scantling-board two Foot and an half long, one Foot three Inches broad, and three Inches thick.
- C** The Scantling handle is to be made of Walnut-tree, about the thickness of a Crown Piece, without Knots; the true Dimension thereof to be four times larger than it appears in the Figure.
- D** The Knife to be made three times bigger than it appears in the Figure.
- E** The Brull to be made three times bigger than it appears in the Figure.
- F** The Mallet for breaking Flax to be one Foot long, four Inches broad, and three Inches thick, with the Handle to be made as in the Figure.
- G** Another Mallet to beat Steel, one Foot long, four Inches broad, three Inches thick, with a Handle to be made as in the Figure.

### *The Dimensions of a Dutch Loom.*

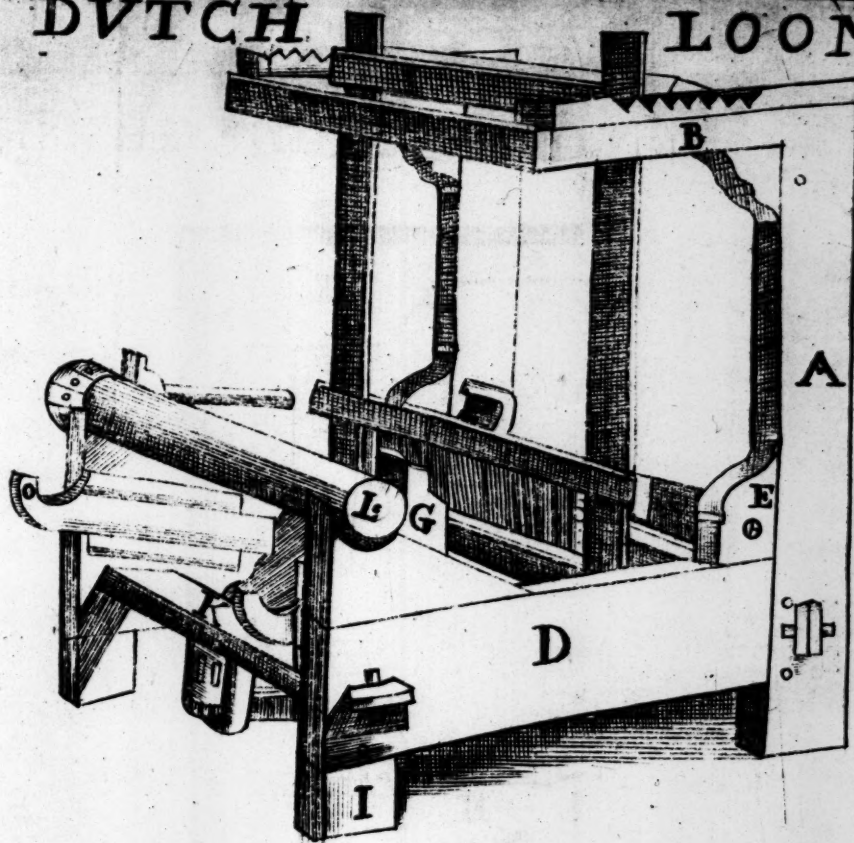
- A** A Streight Post five Foot high without the Tenour, eight Inches and an half broad, and three Inches and an half thick.  
**B** The Cap eight Inches and an half broad, two Foot nine Inches long, and three Inches and an half thick.  
**C** The Side three Foot and an half long, two Foot four or five Inches high at the end without the Foot, and eighteen Inches high at the Breast-beam without the Foot, three Inches and an half thick.  
**D** The Nog to hold the Breast-beam nine Inches high, four and an half broad.  
**E** The Hole in the Nog for the Breast-beam to turn in.  
**F** The Nog to stay the Yarn-beam six Inches high, and five sloaping upon the side.  
**G** A Board to draw out to lengthen the dressing.  
**H** An Iron Hook for the Cloth-beam to run in.  
**I I** Two Mortaises for the flat Bars, seven Inches long and two broad.  
**K** One Foot five Inches high without the Tenour, eight Inches broad and three and an half thick.  
**L** An Iron Pin with a Screw for a Board of three or four Inches broad, and one Inch thick, to go from one side to another.  
**M M** Two flat Bars five Foot long without the Tenours, fourteen Inches broad, and two Inches thick.  
**N** A Yarn-beam six Foot and a quarter long, sixteen Inches in circumference.  
**O** A Breast-beam five Foot long without the Tenours, twelve Inches in circumference.  
**P** A Cloath-beam five Foot long with the Wheel and the two Gudgeons.
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### *The Reference to the Flax-dressers Tools.*

- A** A Scutching-board four Foot high, one Foot three Inches broad, one Inch and a quarter thick, with a Notch cypher'd underneath, and the Board standing a little sloaping outward.  
**B** The Foot of the Scutching-board two Foot and an half long, one Foot three Inches broad, and three Inches thick.  
**C** The Scutching-handle is to be made of Wallnut-tree, about the thickness of a Crown Piece, without Knots; the true Dimension thereof to be four times larger than it appears in the Figure.  
**D** The Knife to be made three times bigger than it appears in the Figure.  
**E** The Brush to be made three times bigger than it appears in the Figure.  
**F** The Mallet for breaking Flax to be one Foot long, four Inches broad, and three Inches thick; with the Handle to be made as in the Figure.  
**G** Another Mallet to thresh Seed, one Foot long, four Inches broad, three Inches thick; with a Handle to be made as in the Figure.

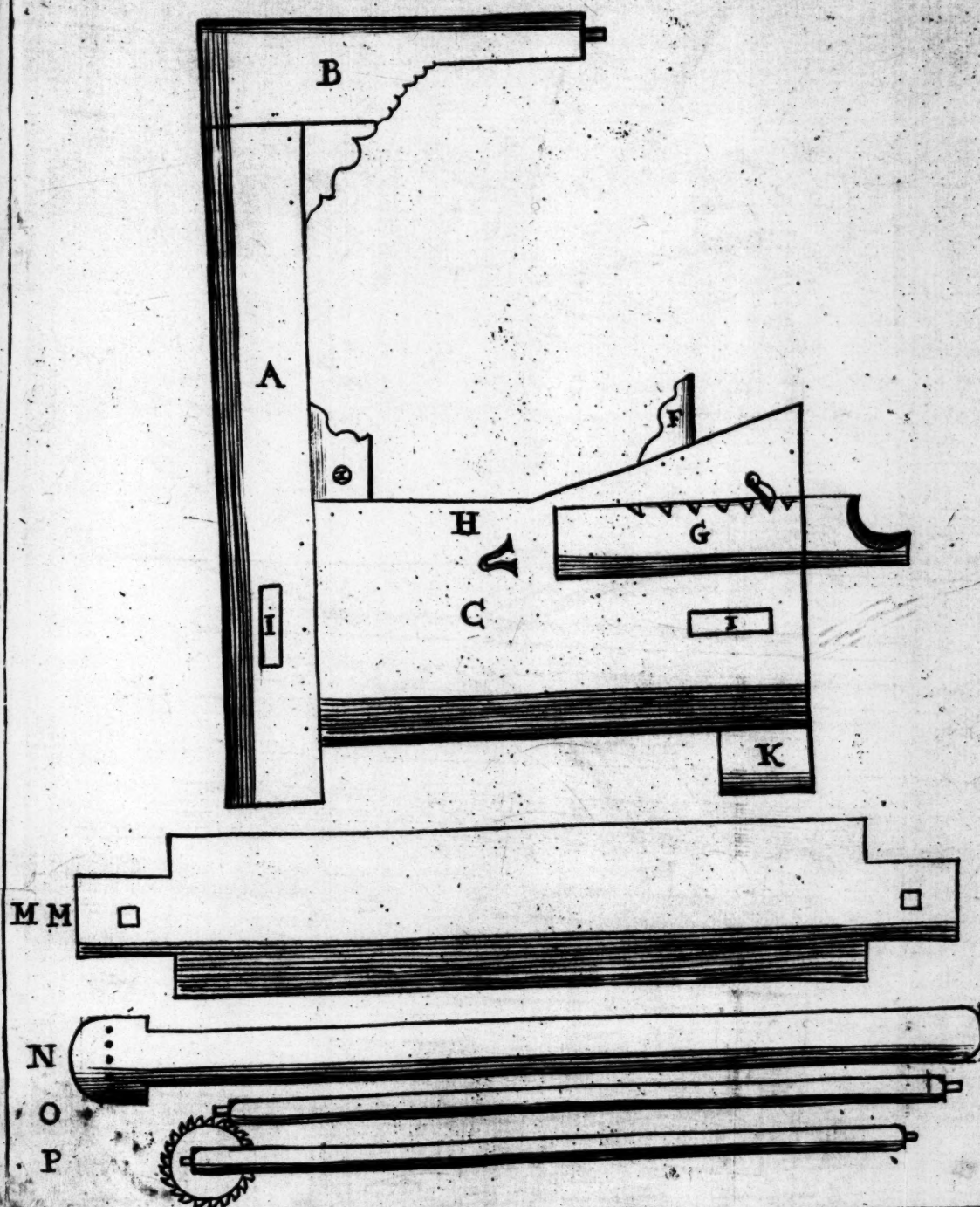
*F I N I S.*

# DVTVH LOOM





# THE SIDE OF A DUTCH LOOM





THE TOOLS FOR A FLAXDRESSER

